Ralph Davenport Mershon

By Leland Roy

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AN ENGINEER from 17 to 65—and still going strong. That, in brief, is the career of Ralph D. Mershon, one of Ohio State's most outstanding and valued alumni, who was awarded the Lamme Medal in 1932.

Born at Zanesville, Ohio, July 14, 1868, he received his early schooling there and began his engineering career at the age of 17 as a member of an engineering corps engaged in railway location and construction. In 1886, after graduation from the Zanesville High School, he entered Ohio State University. During his last year at the University he was a Student Assistant in Physics and Electrical Engineering, and for one year after his graduation was Assistant Instructor of Electrical Engineering. He received his M. E. in E. E. in 1890 and the following year became associated with the Westinghouse Electric and Manufacturing Company, in whose employ he remained until 1900.

While with this company Mr. Mershon gained experience in all branches of electrical work—research, both theoretical and practical, experimental work, designing, shop engineering, road engineering and installation, patent expert work and patent experimental work, and selling. The transformers for which the Westinghouse Company received an award at the World's Columbian Exposition at Chicago in 1893 were of his design. From 1893 until 1895 he had charge of work being done by the Westinghouse Company in connection with the extension of the transmission plant of the Telluride Power Transmission Company of Telluride, Colorado. This was a single phase, alternating-current transmission, employing single-phase, synchronous motors.

The following year at Telluride he carried on investigatoins of phenomena which occur between conductors at high voltages for the Westinghouse and Telluride Companies. This investigation was made on a transmission line about two and a half miles long, and was the first investigation in which quantitative measurements of the ionization and other atmospheric losses occurring between conductors at high voltages were obtained. Original methods of investigation were devised by Mr. Mershon for this work, and special apparatus was designed and built by him, by means of which quantitative measurements were made up to 72,000 volts.

Securing leave of absence from the Westinghouse Company in 1897-98, he acted as chief engineer of the Colorado Electric Power Company during the designing and installation of their transmission plant, which generates current by steam at Canon City, Colorado, and transmits it 25 miles to Cripple Creek, Colorado, where it is used for mining.

Mr. Mershon was engineer of the New York office of the Westinghouse Electric and Manufacturing Company from 1898 until 1900, when he resigned to enter private practice as a Consulting Electrical and Mechanical Engineer in New York City.

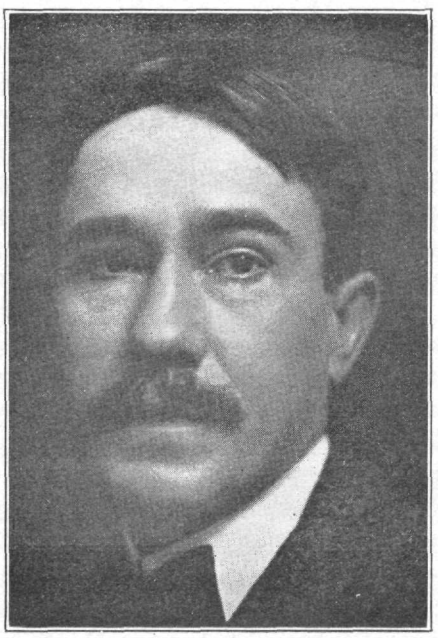
Some of the important pieces of work he has accomplished as Consulting Engineer are:

The reconstruction and enlargement of the water wheel, generating, transforming and transmitting equipment of the St. Lawrence Light and Power Company.

The design and supervision of the first transmission plant of the Shawinigan Water and Power Company, transmitting power at 50,000 volts a distance of 85 miles to the city of Montreal.

The design and installation of the substation equipment of the Montreal Street Railway, for utilizing power transmitted to Montreal from various hydraulic plants.

The design and supervision of the transmission plant of the Niagara, Lockport and Ontario Power Company, for sending power at 60,000 volts to various points in New York State. This plant at the time of its construction was the largest transmission plant ever undertaken anywhere in point of capacity and is one of the most im-



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portant in point of distance and transmission. Its initial capacity was 60,000 horse power and it is laid out for an increase to 180,000 horse power.

The electrical design of the generating station, transmission line and receiving stations of the Inawashiro Hydroelectric Power Company, transmitting power at 115,000 volts from Lake Inawashiro to Tokyo, Japan, a distance of 140 miles.

Mr. Mershon was the only electrical engineer retained by the Victoria Falls Power Company, Rhodesia, South Africa, in connection with the installation of steam stations near Johannesburg for supplying power to the gold mines of Witwatersrand.

Among his more important inventions being manufactured under his patents are:

The Six-Phase Rotary Converter, for converting alternating current to direct current; the Compound Rotary Converter, using an artificial reactance in series with the alternating current side of the rotary converter; a system of Lightning Protection for electric apparatus, especially applicable to high voltage circuits; a System of Protection against the Possibility of Fire in case of installations of oil insulated transformers; a Compensating Voltmeter enabling the indication at any point of a transmission system of the voltage at any other point, without the use of pressure wires.

Among his more important technical papers are:

"The Output of Polyphase Generators and Rotary Transformers," which contained the first published analysis of the effect upon the output of closed coil windings, when the number of phases is varied.

"Drop in Alternating Current Lines," treating of the calculation of drop and giving a table and chart by means of which such calculations can be quickly and accurately made.

"The Maximum Distance to Which Power Can be Economically Transmitted."

"High Voltage Measurement at Niagara," which gives the result of some three years of investigation of the ionization and other atmospheric losses occurring between line conductors at high voltages. This was a continuation of the work previously done by Mr. Mershon at Telluride.

Mr. Mershon, a believer in the greater effectiveness of a reserve of intelligent men than of a large standing army, was one of the prime movers responsible for the National Defense Act of 1916. With Colonel George L. Converse, the late President William O. Thompson, and the late General Ewdard W. Orton, Jr., he was instrumental in formulating and procuring the passing of the legislation creating the Reserve Officers' Training Corps. He was also active in the work which led to the creation of the Engineer Officers' Reserve Corps, and was one of the first majors commissioned in the corps.

When the United States entered the World War Mr. Mershon was detailed to the Naval Consulting Board for the especial purpose of directing the Special Problems Committee of the Board, which had principally to do with submarine detection. For his outstanding contribution in this line he was granted an honorary Doctor of Science degree by Tufts College in 1918. At the time of his retirement from military service he held the rank of Lieutenant Colonel of Engineers.

He was president of the Ohio State University Alumni Association at the time of its reorganization in 1910, and is largely responsible for the present effective alumni organization.

Mr. Mershon is a member and past president of the American Institute of Electrical Engineers and of the Inventors' Guild, and is also a member of many American and foreign technical societies.

He was awarded the John Scott Medal for a Volt Meter Compensator by the city of Philadelphia, and received the Lamme Medal in June, 1932. This medal is awarded annually to an alumnus of the College of Engineering at Ohio State who is outstanding in his field.

Although retired from active practice, Mr. Mershon has in no way lost his interest in the solution of engineering problems. He maintains his own laboratory in New York City, where he is constantly working on improvements of existing inventions and on new inventions.
